

Examiners' Report

January 2016

Pearson Edexcel IAL
in Biology (WBI03)
Paper 01 – Practical Biology and
Research

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Overall Impressions

Overall, the standard on this paper was in line with previous series. Students appeared to struggle in many cases with expressing their ideas. It is clear that basic knowledge of scientific method has improved compared to previous years, but some students continue to struggle with intricacies of the investigative process such as dependant, independent and control variables, accuracy and validity.

Individual Questions

Question 1(a)(i)

The most students achieved this mark, although, surprisingly approximately one quarter of students did not gain a mark. The independent variable was often quoted rather than the dependent variable, a common mistake seen in this paper year on year.

Question 1(a)(ii)

Students who understood the difference between cross sectional area and diameter/radius scored well on this question, with more students having gained mark point 2 than mark point 1. Students who missed this distinction lost marks here. Additional to this a common misconception was that a ruler would be appropriate to measure the diameter/radius, a number of students miss marks here also.

Question 1(a)(iii)

This question was very poorly answered with most students focussing on retting procedures and therefore missing out on the marks by not explaining key pre-treatment aspects.

Question 1(a)(iv)

The vast majority of students gained one mark for this question, with the most common mark awarded for temperature. However, a significant number of students gained the mark for humidity. mark point 2 was less commonly awarded. A common mistake was that students merely stated a water bath would be used, this could not be awarded without an indication that it would need to be thermostatically controlled (this was not adequate for the mark).

Question 1(a)(v)

Most students missed mark point 1, failing to identify the risk of drowning. Most students were able to identify the need for protective goggles when carrying out this experiment; the most common marks came from mark point 3. Quite a few students referred to chemicals used in the retting process within their answers, this was not relevant to this question as it is referring to stems, not extracted fibres. Many students referred to risks of damage from falling Newton meters which was not worthy of the mark.

Question 1(b)(i)

There were only very few students who did not use more than 50% of the graph paper and therefore most students gained the A mark. The L mark was more commonly lost for extrapolation or dot-to-dot lines than incorrect positioning. In some cases the L mark was lost for a line that did not have points distributed on either side. The vast majority of students gained the P mark for accurate plotting. The S mark seemed to be problematic for a small number of students for example some students did not plot standard deviation as bars but as a separate line on the graph, indicating that they did not understand what they represented. Some students did not plot the standard deviation at all. Another, less common mistake seen was that some students plotted bars which were asymmetrical.

Question 1(b)(ii)

Nearly every student gained this mark with students demonstrating a good understanding of the relationship between the variables. A relatively uncommon mistake was that some students suggested that there was a negative correlation.

Question 1(b)(iii)

Most students gained at least one mark here and many showed their understanding of what standard deviation is. A significant majority of students discussed the reliability or validity of the data or results and therefore did not answer the question and thus did not gain mark point 2.

Question 1(c)

Most students gained the mark for mark point 1 by identifying the correlation between the variables. mark point 4 was not awarded as often as was anticipated and this was mostly due to students not using the data provided in their answer. This is an important practical skill and it was a shame to see that this has not been grasped by many students. Students that were able to manipulate the data to back up their statements scored well on this question.

Question 2(a)

This is a simple question which students none-the-less often (historically) find challenging, with students failing to identify the problem that is being described in the report. In this case only approximately two thirds of students gained this mark suggesting that this is a skill that many students are lacking. Students that were able to gain this mark demonstrated a good grasp of the report extract.

Question 2(b)(i)

Of the students that did not gain mark point 1 the main reason was that they did not include keratitis in their answer. Additionally, a number of students did not construct a table despite the question directly asking for one. Alternatives to tables included bar charts and pie charts. In addition a less common mistake seen was students who had made rounding errors and rounded 1.5 down to 1 and as a result lost mark point 2.

Question 2(b)(ii)

The addition of extra words e.g. vol prevented the awarding of mark point 1 for a significant number of students. Most students however, gained mark point 2. Surprisingly one key aspect that was missed by a number of students was the abbreviation of the authors' names.

Question 2(c)

On the whole this question was generally well answered with most students being able to correctly identify and extract the two pieces of advice associated with the greatest risk. However, a minority of students did not choose either of these two risks and sometimes listed ideas that were not in the table at all.

Question 2(d)

This question was well answered by students, showing a good understanding of the economic issues presented in the report. The main mistake made by students was to quote the article for health care service and not relate to economics. mark point 4 was the most commonly gained mark.

Question 2(e)(i)

Many students gained the full range of marks in this question. Some students answered this question especially well, with students giving three points in some cases. In cases where students only gained one mark the most common gained was mark point 4, this was, in many cases very well explained but was only worthy of one mark. The most commonly missed mark was mark point 3.

Question 2(e)(ii)

Despite a number of students being unable to identify the problem in the report (question 2a) this was a generally, well answered question with the vast majority of students correctly identifying the main solution.

Question 2eiii

The most commonly awarded mark was mark point 1, with much fewer students gaining mark point 2. Many students wrote about Fimbrolides but didn't go onto to talk about reduced adhesion in their answer.

Question 2(f)

This was a reasonably well answered with some students providing very clear concise answers, these mainly stated mark point 2 and then mark point 1. mark point 3 was however, rarely gained by students.

Paper Summary

Based on their performance on this paper, students are offered the following advice:

- Ensure that you are familiar with all of the nine core practicals.
- Within the context of the 9 core practicals learn the details of the scientific method including variables, accuracy and validity.
- Ensure you are confident at accurately plotting graphs and drawing tables, this is an important skill, and an area that students often lose marks in.
- Ensure that you are familiar with data handling, understanding the importance of manipulating data and using this in your answers. These are often needed to illustrate the points being made.
- Note that, although sometimes it is enough to find an answer to a question in a provided passage, this sometimes may not be enough, read the question carefully to determine what it is asking of you.
- Remember that the specification states that: "The first question will be based on an area of one (or more) of the specified core practicals, but will generally be set in a novel situation". Remembering details and they applying in situations where they are not relevant is likely to lose you marks.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

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